THE PENNSYLVANIA STATE UNIVERSITY

1959-1960

TWO-YEAR ASSOCIATE DEGREE CURRICULUMS

PSU STATE COLLECTION

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THE PENN STATE CENTERS

PENN STATE CENTER IN ALLENTOWN
725 Ridge Avenue, Allentown, Pa. HEmlock 7-3569

ALTOONA CAMPUS, THE PENNSYLVANIA STATE UNIVERSITY
Box 1, R. D. 4 (Ivyside), Altoona, Pa. WIndsor 4-6107

DUBOIS CAMPUS, THE PENNSYLVANIA STATE UNIVERSITY
College Place, DuBois, Pa. 333

BEHREND CAMPUS, THE PENNSYLVANIA STATE UNIVERSITY
Erie (Station Road, Wesleyville), Pa. 8-3101

PENN STATE CENTER IN HARRISBURG
P. O. Box 1144 (South Office Bldg.), Harrisburg, Pa. CEdar 3-5694

HAZLETON CAMPUS, THE PENNSYLVANIA STATE UNIVERSITY
Highacres, Hazleton, Pa. GLadstone 4-8731

MCKEESPORT CAMPUS, THE PENNSYLVANIA STATE UNIVERSITY
University Drive, McKeesport, Pa. ORchard 2-9628
HOmestead 1-8556

PENN STATE CENTER IN NEW CASTLE
Oak Street, New Castle, Pa. OLiver 8-8536

PENN STATE CENTER IN NEW KENSINGTON
840 Fourth Avenue, New Kensington, Pa. EDison 5-9856

OGONTZ CAMPUS, THE PENNSYLVANIA STATE UNIVERSITY
1600 Woodland Road TUrner 6-9400
Abington (Suburban Philadelphia), Pa.

PENN STATE CENTER IN POTTSVILLE
912 Mahantongo Street, Pottsville, Pa. MArket 2-2281

PENN STATE CENTER IN SCRANTON
1625 Wyoming Avenue, Scranton, Pa. DIamond 7-9726

PENN STATE CENTER IN STATE COLLEGE
General Extension Office ADams 8-8441
University Park, Pa. Ext. 2523

PENN STATE CENTER IN WILKES-BARRE
669 N. Washington Street, Wilkes-Barre, Pa. VAlley 3-5111

PENN STATE CENTER IN WYOMISSING
Eighth and Hill Avenue, Wyomissing, Pa. FRanklin 4-2861

YORK CAMPUS, THE PENNSYLVANIA STATE UNIVERSITY
1031 Edgecomb Avenue, York, Pa. 6847

University Administration

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College of Business Administration	Ossian MacKenzie, LL.B., *Dean*
College of Chemistry and Physics	F. G. Brickwedde, Ph.D., *Dean*
College of Education	John R. Rackley, Ph.D., *Dean*
College of Engineering and Architecture	Merritt A. Williamson, Ph.D., *Dean*
College of Home Economics	Grace M. Henderson, Ph.D., *Dean*
College of the Liberal Arts	Ben Euwema, Ph.D., *Dean*
College of Mineral Industries	Elburt F. Osborn, Ph.D., *Dean*
College of Physical Education and Athletics	Ernest B. McCoy, M.A., *Dean*
Graduate School	Harold K. Schilling, Ph.D., *Dean*

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TWO-YEAR ASSOCIATE DEGREE CURRICULUMS

THE TWO-YEAR CURRICULUMS, leading to the Associate Degree, are terminal-type programs designed to provide concentrated, specialized instruction and training in a variety of fields.

All of the Associate Degree programs are intended to prepare the graduate in a minimum amount of time for immediate assignment to rather specfic categories of positions.

The technological programs – Chemical Technology, Drafting and Design Technology, Electrical Technology, Metallurgical Technology, Production Technology, and surveying Technology – were developed in response to a growing demand for trained engineering associates and technicians. Such programs have been defined by the Engineers' Council for Professional Development as having the following characteristics:

1. Their purpose is to prepare individuals for various technical positions or lines of activity encompassed within the field of engineering, but the scope of the programs is more limited than that required to prepare a person for a career as a professional engineer.

2. Programs of instruction are essentially technological in nature, based upon principles of science, and they include sufficient post-secondary school mathematics to provide the tools to accomplish the technical objectives of the curriculums.

3. Emphasis is placed upon the use of rational processes in the principal fundamental portions of the curriculums that fulfill the stated objectives and purposes.

4. Programs of instruction are briefer and usually more completely technical in content that professional curriculums, although they are concerned with the same general fields of industry and engineering. They do not lead to the baccalaureate degree in engineering.

Such designations as engineering aide, associate in engineering, and engineering associate are appropriate terms to be conferred upon graduates of programs of the technical institute type.

5. Training for artisanship is not included within the scope of education of the technical institute type. The technical institute programs for engineering associates are not diluted professional engineering curriculums. They are designed to give the student a scientific and general education necessary for immediate employment at specific technical assignments.

ADMISSION REQUIREMENTS – Applicants shall have been graduated from an accredited secondary school and shall have completed at least 15 Carnegie units of preparatory work, except that graduates of three-year senior high schools need present only the 12 units of work taken in senior high school.

Applicants for admission to Chemical Technology, Drafting and Design Technology, Electrical Technology, Production Technology, and Surveying Technology curriculums must have completed at least 3 units of English and 2 units of mathematics in secondary school.

Applicants for admission to the Medical Technology curriculum must have completed at least 3 units of English, 1 unit of algebra, and 1 unit of plane geometry.

Applicants for admission to the Metallurgical Technology curriculum must have completed at least 3 units of English and 2 units of mathematics, of which 1 must be in algebra and the other may be in algebra or plane geometry.

An applicant must state in writing whether or not he has attended any other institution of higher learning, even though advanced standing is not desired. Failure to indicate, at the time of registration, previous registration in another institution invalidates the admission.

Applicants without regular high school requirements who can submit evidence of a background of experience or training may be considered as special students. Previous scholastic records, age, maturity, and pertinent industrial experience are among the factors considered.

Admission with Advanced Standing – An applicant who has attended another institution of higher learning may be considered for admission with advanced standing.

The requirements for admission for such a student are the same as for a new student as far as his secondary school record is concerned. In all cases where work has been taken at other institutions, an official transcript from each place of attendance must be submitted directly to the Dean of Admissions by the institutions attended. The latter must include evidence that the student was honorably dismissed and was in good academic standing at the time of leaving.

It should be noted that honorable dismissal applies to conduct and to moral character and that academic standing applies to the scholastic ability and performance of the student. A student required to withdraw from another institution for poor scholarship or for any other reason is not eligible for admission to any division of this University. To be considered for admission, the applicant must be eligible to return to institutions previously attended in good academic standing and not on probation.

Advanced standing may be granted through the following procedures:

1. By transfer of credit from another institution of higher learning or from another division of The Pennsylvania State University, not to exceed 34 credits.
2. By examination in specifically approved courses, not to exceed 15 credits.

Special Students – An applicant not fully qualified for admission but having acceptable industrial or practical experience, or a self-taught understanding of basic subjects, may be permitted to take certain courses as a special student. An applicant desiring to enroll in a limited program may also register as a special student.

GRADING SYSTEM – Grades shall be reported by the following symbols: A, B, C, D, and F.

Grade	*Percentage Equivalent*	*Grade Point Equivalent*
A	90 - 100	4
B	80 - 89	3
C	70 - 79	2
D	60 - 69	1
F (Failure)	0 - 59	0

GRADUATION REQUIREMENTS – In order to be graduated, a student must complete the course requirements of his curriculum and earn at least a C (a grade point average of 2) average for all courses.

STUDENT WELFARE — To help new students plan their college program and choose a suitable career, Penn State requires that each entering student take a series of tests given by the Division of Counseling before he registers for his first semester.

Later the student and his parents will be invited to discuss the test results with a counselor for the purpose of (1) choosing a suitable program of study, and (2) deciding whether or not the student needs additional preparation in mathematics or English before he begins his first semester.

During the discussion, members of the staff will also answer questions concerning the practices, procedures, and regulations of the University.

ORIENTATION WEEK PROGRAM — An orientation program is arranged for the week preceding the official opening of classes. The Orientation Week Program is designed to acquaint new students with various phases of university life and to assist them in making adjustments to their new environment. By offering programs of this type, the faculty hopes to overcome many of the difficulties encountered by students at the beginning of their university work.

The scheduled events range from informal discussions and personal talks between individual students and members of the faculty to lectures concerning the meaning of a university education, university techniques, and significance of the courses offered.

SUPERVISION — The work of the student is supervised by the administrative head of the Center and by a supervisory staff from the main campus who receive frequent reports of the academic standing of each student, and who endeavor constantly to improve the standard of the student's work. These officials are available for conferences with parents and students on educational problems and give considerable time to advising students as to future vocational and educational goals.

ADVISORY PROGRAM — The Penn State Centers take a friendly and scientific interest in their students; hence, a guidance program is operated at each Center, based upon the theory that a knowledge of the capacities, interests, and needs of each student is essential to provide for him an effective program of instruction. An adviser is assigned to each student.

HEALTH SERVICE — The Center's Health Service assists in conserving, maintaining, and promoting the health of students. Each Center is equipped with a dispensary, and employs a full-time registered nurse. A local physician is on call.

All new, full-time students must undergo a physical examination before attending classes.

The routine health services of the dispensary are available to full-time students during the daytime class hours. While the University does not assume any liability (see below) for injuries sustained on Center premises, such injuries or sudden illness may be treated by the Center physician in the dispensary, or elsewhere on Center premises when necessary, if such treatment is authorized by an officer of the Center.

INSURANCE PROTECTION — The Pennsylvania State University is an instrumentality of the Commonwealth performing its function of education. It is not liable for the negligence of its officers, servants and employees when in the exercise of public or governmental powers or in the performance of public or governmental duties incident to the general educational work of the University. Therefore any student who desires insurance protection while in attendance at

the University (1) against personal injury and/or (2) against loss of property by fire or theft should arrange personally for whatever insurance seems advisable.

SCHOLARSHIPS — Scholarships for students in Associate Degree programs are available at certain Centers. For information concerning scholarships as well as other forms of student aid, consult with the administrative head of the Center.

FEES AND OTHER EXPENSES

General Fee — The general fee for associate degree curriculums is $240 per semester.

Enrollment Fee — All entering students who plan to enroll for 12 or more credits are required to pay a nonrefundable enrollment fee or $25 upon acceptance of an offer of admission.

Credit by Examination — A charge of $1 per credit is made. Evaluation of credits completed elsewhere — A charge of $10 is made for those applying for admission; a charge of $1 for those who are already matriculated.

Room and Key Deposit — Students assigned to residence halls (at certain Centers) are required to pay a $10 deposit. The deposit is retained as a key and damage deposit and is refundable at the close of the spring semester, or upon the student's withdrawal from the residence hall.

Summer Session — Summer classes between the first and second years are required in certain engineering technology programs, and such instruction may be given only at the main campus at University Park. Consult the administrative head of the Center for information about additional expense and other details.

Student Activities — The use of funds for student activities is determined by elected representatives of the student body, together with a faculty representative.

Change of Schedule Fee — A fee of $2 is charged for each change of schedule, unless such change is required for administrative reasons.

Payment of Fees — All fees and assessments are payable at the time the student registers at the beginning of each semester. In exceptional cases the administrative head may, after consultation with the student and his parents or guardian, permit astudent to register under a deferred-payment plan. All remittances are made payable to The Pennsylvania State University.

Late Registrants — A fee of $10 is charged a student who fails to register on the appointed days, unless it is evident that the delay was unavoidable.

Other Expenses — Books and supplies must be secured by the student. These vary from approximately $40 to $60 per semester, depending upon the curriculum. Students at several Centers are assessed a fee of $10 per semester for the establishment and operation of Student Union facilities.

WITHDRAWALS AND REFUNDS — In the event of withdrawal, charges for fees and room and board will be refunded under the following policy:

> Refund of 90 per cent upon withdrawal before the end of the first week of the semester (seventh consecutive calendar day from the first day of classes), and a decrease of 10 per cent for each week thereafter, up to and including the ninth consecutive calendar week, after which no amount will be refunded.

Under this policy, if a student is enrolled in two or more courses, but continues and completes other courses, the amount charged for withdrawal from the other course or courses shall be determined by the above policy.

PLACEMENT ASSISTANCE — The Centers assist graduates of the Associate Degree programs in arranging interviews with prospective employers. Such assistance should be requested through the administrative head.

CURRICULUMS

RESERVATIONS — The University reserves the right to make such program or class changes as may become necessary because of insufficient enrollment or other contingencies. The University also reserves the right to make any necessary changes in fees and charges without prior notice.

CHEMICAL TECHNOLOGY

The rapid expansion of the chemical industry and related industries has brought about an increasing need for additional persons in positions such as technicians and assistants on engineering or scientific "teams."

Persons in these positions find it necessary to have a reasonable proficiency in basic sciences, mathematics, and communication skills, as well as some understanding of chemical technology.

Graduates of the Chemical Technology curriculum would be expected to have these proficiencies and to qualify for positions as assistants to chemists and chemical engineers, assistants in research and control laboratories, and as trainees for future supervisory positions in manufacturing and production.

FIRST YEAR

Fall Semester	Credits	Spring Semester	Credits
Chem. 800, General Chemistry	3	Chem. 801, General Chemistry	3
Chem. 820, Chemical Laboratory Techniques	3	Chem. 830, Organic Chemistry	3
E. Cmp. 800, English Grammar	3	Engl. 1, Composition and Rhetoric	3
Math. 2, Algebra	3	Math. 6, Plane Trigonometry	3
Phys. 801, Elementary Physics	3	Phys. 802, Elementary Physics	3
	15		15

SECOND YEAR

Fall Semester	Credits	Spring Semester	Credits
Ch.E. 800, Technical Calculations	3	Ch.E. 802, Chemical Technology	3
Ch.E. 830, Industrial Chemistry	3	Ch.E. 803, Chemical Technology	3
Chem. 821, Introductory Analytical Chemistry	4	Chem. 831, Organic Chemistry	3
Dr. 4, Engineering Drawing	2	Phys. 821, Instrumentation	3
Phys. 820, Instrumentation	3	Elective	3
	15		15

DRAFTING AND DESIGN TECHNOLOGY

This curriculum is intended to prepare detail or layout draftsmen and junior designers for manufacturing industries as well as for the many concerns engaged in installation or erection work. The principal objective of the curriculum is to prepare young men and women for employment in machine design, tool and die design, or structural layout.

FIRST YEAR

Fall Semester	Credits	Spring Semester	Credits
Dr. 1, Engineering Drawing	2	Dr. 2, Descriptive Geometry	2
Dr. 800, Drawing Room Standards and Practices	2	Engl. 1, Composition and Rhetoric	3
E.Cmp. 800, English Grammar	3	E.Mch. 811, Elementary Mechanics	3
Engr. 800, Technical Calculations	4	I.E. 803, Industrial Relations	2
Engr. 801, Introduction to Engineering	0	I.E. 811, Engineering Materials	4
I.E. 801, Industrial Organization and Management	2	Math. 2, Algebra	3
Phys. 800, Elements of Physics	3		17
	16		

Summer Session — Credits
I.E. 812, Manufacturing Processes — 3

SECOND YEAR

Fall Semester	Credits	Spring Semester	Credits
A.E. 808, Graphic Analysis	3	A.E. 809, Structure Design	3
Dr. 803, Advanced Engineering Drawing	3	C.E. 861, Fluid Flow	2
E.Mch. 813, Strength and Properties of Materials	3	E.E. 800, Applied Electricity	2
Math. 6, Plane Trigonometry	3	I.E. 805, Economics of Industry	2
M.E. 805, Kinematics	3	I.E. 815, Production Design	4
Spch. 200, Effective Speech	3	M.E. 810, Product Design	4
	18		17

ELECTRICAL TECHNOLOGY

This curriculum is designed to prepare graduates for technological service with electrical utilities, manufacturers of electrical and electronic equipment, and electrical maintenance and instrument departments of various industrial concerns. The principal objective of the curriculum is to provide a practical knowledge of electrical machinery and its control, as well as of electronic theory and its application in communication and control systems.

FIRST YEAR

Fall Semester	Credits	Spring Semester	Credits
Dr. 1, Engineering Drawing	2	Dr. 2, Descriptive Geometry	2
E.Cmp. 800, English Grammar	3	Engl. 1, Composition and Rhetoric	3
E.E. 801, Fundamentals of D.C. Circuits	3	E.E. 802, D.C. Circuits and Laboratory	4
E.E. 809, Electrical Instrumentation	2	E.E. 808, Fundamentals of A.C. Circuits	2
Engr. 800, Technical Calculations	4	E.Mch. 811, Elementary Mechanics	3
Engr. 801, Introduction to Engineering	0	Math. 2, Algebra	3
Phys. 800, Elements of Physics	3		17
	17		

Summer Session — Credits
E. E. 813, Fundamentals of Electrical Machines — 3

SECOND YEAR

Fall Semester	Credits	Spring Semester	Credits
E.E. 803, D.C. Machines and Laboratory	3	E.E. 805, A.C. Machines and Laboratory	4
E.E. 804, A.C. Circuits and Laboratory	2	E.E. 806, Electric Power Generation and Distribution	1
E.E. 807, Electrical Construction	1	E.E. 811, Applied Electronics and Laboratory	5
E.E. 810, Elementary Electronics	3	E.E. 812, Communication Systems	1
I.E. 801, Industrial Organization and Management	2	I.E. 803, Industrial Relations	2
Math. 6, Plane Trigonometry	3	I.E. 805, Economics of Industry	2
Spch. 200, Effective Speech	3	M.E. 800, Mechanisms	2
	17		17

HOTEL AND FOOD SERVICE

This curriculum offers an intensive, two-year program designed to provide basic training in the philosophy, techniques, and procedures necessary for the successful operation of hotels and food service establishments. Students who successfully complete the courses listed may earn the baccalaureate degree after satisfactorily finishing three additional years of training in the College of Business Administration or in Institution Administration in the Department of Hotel and Institution Administration.

The extensive housing and food service facilities owned by the University are utilized in training students. *This curriculum is offered only on the University Park campus.*

FIRST YEAR

Fall Semester	Credits	Spring Semester	Credits
Chem. 3, Essentials of Chemistry	3	Chem. 4, Essentials of Chemistry	3
F.N. 121, Foods	4	Engl. 1, Composition and Rhetoric	3
F.N. 150, Elementary Nutrition	2	°H.F.S. 803, Food Merchandising, or †H.F.S. 804, Front Office Practices	3
H.F.S. 800, Orientation	1	H.F.S. 805, Training and Supervision	3
H.F.S. 801, Communication Techniques	3	H.F.S. 806, Social Practices	1
H.F.S. 802, Sanitation	3	In.A. 330, Quantity Cookery	4
Ph.Ed. 1 or 11	1	Ph.Ed. 2 or 12	1
	17		18
		H.F.S. 815, Practical Experience	(0)

‡SECOND YEAR

Fall Semester	Credits	Spring Semester	Credits
Acctg. 1, Elementary Accounting	3	°H.F.S. 810, Foods Experience, or †H.F.S. 811, Building Maintenance	4
Econ. 14, Principles of Economics	3	°H.F.S. 812, Food Procurement, or †H.F.S. 813, Procurement of Supplies	3
Engl. 3, Exposition	3	H.F.S. 814, Food Cost Control	3
H.F.S. 807, Catering	4	Psy. 2, Psychology	3
°H.F.S. 808, Food Service Equipment, or †H.F.S. 809, Housekeeping Practices	3	Spch. 200, Effective Speech	3
Ph. Ed. 3 or 13	1	Ph. Ed. 4 or 14	1
	17		17

° Emphasis on commercial food service.
† Emphasis on hotel service.
‡ Effective fall of 1960.

MEDICAL TECHNOLOGY

A combination of science courses which satisfies the requirements of the Board of Registry of Medical Technologists. Upon completion of the two-year program, the student will be eligible for an Associate Degree in Medical Technology, and may apply to enter any approved hospital.

At the end of at least 12 months of work in a hospital training program, the student will be qualified to take the examination for certification as a medical technologist. The Associate Degree will be given only for the two-year program at the Center. All courses listed are acceptable for transfer to the four-year program leading to a B.S. degree at the University Park campus, provided the student has at least a "C" average at the time of transfer.

FIRST YEAR

Fall Semester	Credits	Spring Semester	Credits
Chem. 1, General Chemistry	5	Chem. 2, General Chemistry and Qualitative Analysis	5
Engl. 1, Composition and Rhetoric	3	Engl. 3, Exposition	3
Math. 2, Algebra	3	Math. 6, Plane Trigonometry	3
Zool. 25, General Zoology	3	Zool. 26, General Zoology	3
Elective	3	Elective	3
	17		17

SECOND YEAR

Fall Semester	Credits	Spring Semester	Credits
Chem. 20, Quantitative Analysis	5	Bact. 1, General Bacteriology	4
Phys. 215, Introductory Physics	3	Phys. 265, Introductory Physics	3
Zool. 29, Mammalian Anatomy, or Zool. 41, Human Physiology	3	Spch. 200, Effective Speech	3
Elective	3	Electives	6
	14		16

METALLURGICAL TECHNOLOGY

This curriculum is intended to prepare graduates for work as assistants to metallurgists and production supervisors of metals plants. Graduates should find positions in such organizations as aircraft, automobile, and machine manufacturing firms; electroplating plants; foundries; nonferrous metal plants; iron and steel companies; government arsenals; fabricators of steel products (wire, tubing, sheet metals, stamping); and atomic power plants.

FIRST YEAR

Fall Semester	Credits	Spring Semester	Credits
Chem. 3, Essentials of Chemistry	3	Engl. 1, Composition and Rhetoric	3
E.Cmp. 800, English Grammar	3	E.Mch. 811, Elementary Mechanics	3
Engr. 800, Technical Calculations	4	I.E. 801, Industrial Organization and Management	2
Metal. 800, Introductory Metallurgy	3	Math. 2, Algebra	3
Metal. 801, Metallurgical Industries and Processes	4	Metal. 802, Chemical Metallurgy	3
	17	Metal. 803, Physical Metallurgy	3
			17

SECOND YEAR

Fall Semester	Credits	Spring Semester	Credits
Engl. 3, Exposition	3	E.Cmp. 826, Report Writing	3
E.Mch. 813, Strength and Properties of Materials	3	I.E. 803, Industrial Relations	2
Math. 6, Plane Trigonometry	3	I.E. 805, Economics of Industry	2
Metal. 804, Ferrous Metallurgy	3	I.E. 807, Statistical Quality Control	3
Metal. 805, Nonferrous Metallurgy	3	Metal. 806, Metallurgical Technology 1	4
		Metal. 807, Metallurgical Technology 2	3
	15		17

PRODUCTION TECHNOLOGY

Production Technology curriculum prepares its graduates for employment by manufacturing enterprises in those activities which are associated with production management. The objective of this program is to qualify students in basic engineering science, principles of methods analysis, motion study, time study, wage payment, production planning and control and quality control.

The first year's work will provide a basic knowledge of industrial processes and will enable the student to do simple drafting and to perform routine clerical and production functions. Students completing the second year will have a clear understanding of the management controls required to operate manufacturing businesses. This should lead to confidence in doing satisfactory work in computing standards, laying out work-stations, improving methods, writing job descriptions, estimating costs, and making routine calculations.

FIRST YEAR

Fall Semester	Credits	Spring Semester	Credits
Dr. 1, Engineering Drawing	2	Engl. 1, Composition and Rhetoric	3
Dr. 800, Drawing Room Standards and Practices	2	E.Mch. 811, Elementary Mechanics	3
E.Cmp. 800, English Grammar	3	I.E., 803, Industrial Relations	2
Engr. 800, Technical Calculations	4	I.E. 805, Economics of Industry	2
Engr. 801, Introduction to Engineering	0	I.E. 811, Engineering Materials	4
I.E. 801, Industrial Organization and Management	2	Math. 2, Algebra	3
Phys. 800, Elements of Physics	3		17
	16		

Summer Session	Credits
I.E. 812, Manufacturing Processes	3

SECOND YEAR

Fall Semester	Credits	Spring Semester	Credits
Dr. 803, Advanced Engineering Drawing	3	C.E. 861, Fluid Flow	2
E.Mch. 813, Strength and Properties of Materials	3	E.E. 800, Applied Electricity	2
I.E. 804, Statistics and Nomography	2	I.E. 808, Plant Layout	2
I.E. 816, Methods Analysis and Motion Study	4	I.E. 809, Inspection and Quality Control	4
Math. 6, Plane Trigonometry	3	I.E. 810, Production Planning and Control	3
Spch. 200, Effective Speech	3	I.E. 817, Time Study and Wage Payment	4
	18		17

SURVEYING TECHNOLOGY

The objective of this curriculum is to provide a knowledge of the elements of surveying as applied to construction, land, topographic, geodetic, city and photogrammetric surveys, and to develop trained personnel who understand the relation between the precision of measurements and the interpretation of data in addition to having an appreciation of the skills and equipment needed to make precise measurements in the field of surveying.

FIRST YEAR

Fall Semester	Credits	Spring Semester	Credits
C.E. 811, Plane Surveying	4	C.E. 809, Topographic Drawing	2
Dr. 1, Engineering Drawing	2	C.E. 815, Geodetic Surveying	3
E.Cmp. 800, English Grammar	3	Engl. 1, Composition and Rhetoric	3
Engr. 800, Technical Calculations	4	E.Mch. 811, Elementary Mechanics	3
Engr. 801, Introduction to Engineering	0	I.E. 805, Economics of Industry	2
Phys. 800, Elements of Physics	3	Math. 2, Algebra	3
	16		16

Summer Session	Credits
C.E. 813, Summer Surveying Camp	4

SECOND YEAR

Fall Semester	Credits	Spring Semester	Credits
C.E. 812, Curves and Earthwork	3	C.E. 810, Statistics and Least Squares	3
C.E. 817, Cartographic Techniques	2	C.E. 814, Photogrammetry	4
C.E. 818, Route Surveying	2	C.E. 816, Special Surveys	3
C.E. 890, Legal Aspects of Surveying	2	E.Cmp. 826, Report Writing	3
Math. 6, Plane Trigonometry	3	E.E. 800, Applied Electricity	2
Pl. Sc. 3, Government and Politics in Modern Society	3	I.E. 803, Industrial Relations	2
Spch. 200, Effective Speech	3		17
	18		

TWO-YEAR COURSE IN AGRICULTURE

This curriculum is intended for students who are interested in agricultural training at the University level, but of shorter duration than the traditional four years.

The student may pursue a program of study in almost any phase of agriculture and related fields. Transfer to a four-year agricultural curriculum may be made with little or no loss in completed credits.

The graduate may qualify for a position as farm manager; dairy and livestock herdsman; fieldman; soil conservationist aide; manager of a creamery, ice cream, or milk plant; operator of his own farm; or work in farm equipment retailing and in sales and service cooperatives.

One year of the two-year program may be taken at the Penn State Centers in Altoona, DuBois, Erie, Hazleton, Ogontz (Phila.), or Pottsville, after which the student must transfer to the main campus to complete the program. Both years may be taken on the main campus, however, if the student prefers.

For detailed information, request the catalog, *Two-Year Courses in Agriculture,* from a Penn State Center, or from the College of Agriculture, The Pennsylvania State University, University Park, Pennsylvania.

COURSE DESCRIPTIONS

CREDITS AND HOURS

A credit requires three hours per week of an average student's time. The distribution of that time between class activities (such as lecture, recitation, laboratory, field trip, etc.) and outside preparation varies from course to course.

Credits, classroom work, and laboratory work are indicated by three numbers in parentheses immediately following the course title.

1. The first number shows the maximum course credits and therefore the total time required by the course per week. For example, a 2-credit course normally requires 6 hours per week for class activity and individual preparation.

2. The second number shows the hours of classroom work, including lecture, recitation, class discussion, demonstration, or various combinations of these.

3. The third number shows the hours of practicum room work, including laboratory, shop work, studio, drafting room, field trips, etc.

Courses numbered from 800 to 899 are for credit in a Two-Year Program only. These numbers are reserved for courses used in the Associate Degree programs which do not carry credit toward a baccalaureate or higher degree.

ACCOUNTING (ACCTG)

1. Elementary Accounting (3:2:2) Fundamentals of accounting under the double entry system, including trial balances, work sheets, and preparation of financial statements.

2. Elementary Accounting (3:2:2) Continuation of Acctg. 1. Accounting for assets, manufacturing businesses, proprietorship and partnership capital, corporate capital stock, surplus, reserves, dividends, and bonds; analysis of financial statements. Prerequisite: Acctg. 1.

ARCHITECTURAL ENGINEERING (A E)

808. Graphic Analysis (3:1:6) Graphical analysis of force systems, centers of gravity, stresses in framed structures, arches, walls, moments and deflections of beams. Prerequisites: E.Mch. 811, Dr. 2.

809. Structure Design (3:1:6) Elementary principles of structural design and detailing in timber, steel, and reinforced concrete; use of handbooks; fundamentals of structural and architectural drafting. Prerequisites: E.Mch. 813, A.E. 808, Dr. 803.

BACTERIOLOGY (BACT)

1. General Bacteriology (4:2:4) Elementary principles of bacterial morphology and physiology; relation of microorganisms to fermentation, disease, food, dairy products, water purification, sewage disposal, and soil fertility. Prerequisite: Chem. 2 or 4.

CHEMICAL ENGINEERING (CH E)

800. Technical Calculations (3:3:0) Methods of calculation for combustion, chemical production, and allied processes on the basis of material and heat balances.

802. Chemical Technology (3:3:0) Introductory discussion and problems relating to flow of fluids and transfer of heat. Prerequisite: Ch.E. 800.

803. Chemical Technology (3:3:0) Elementary discussion and problems involving evaporation, distillation, and air-water interaction. Prerequisite: Ch.E. 800.

830. Industrial Chemistry (3:3:0) The commercial preparation of important chemicals and derivatives with emphasis upon the chemistry involved and the flow of material. Prerequisite: Chem. 830.

CHEMISTRY (CHEM)

1. General Chemistry (5:4:3) Introductory course which prepares for further study of the science; fundamental principles correlated with descriptive chemistry. Breakage ticket $10.
2. General Chemistry and Qualitative Analysis (5:3:6) Continuation of Chem. 1 with emphasis on the metallic elements and ionic equilibrium. Prerequisite: Chem. 1. Breakage ticket $10.
3-4. Essentials of Chemistry (3:2:3 each) An introductory course. Selected principles and applications of chemistry; properties of important substances including compounds of carbon. Breakage ticket $10 each.
20. Quantitative Analysis (5:2:9) Gravimetric, titrimetric, and colorimetric determinations, theory and calculations. Prerequisite: Chem. 2. Breakage ticket $10.
800-801. General Chemistry (3:2:3 each) Basic principles of chemistry; properties and uses of some industrially important elements and compounds.
820. Chemical Laboratory Techniques (3:1:6) Study of techniques commonly employed in chemical laboratory work and in small-scale chemical operations. Prerequisite or concurrent. Chem. 800.
821. Introductory Analytical Chemistry (4:2:6) Principles and techniques of chemical analysis. Prerequisites: Chem. 801, 820.
830. Organic Chemistry (3:2:3) General principles of organic chemistry. Preparation and properties of aliphatic and aromatic compounds. Prerequisite: Chem. 800.
831. Organic Chemistry (3:2:3) Continuation of Chem. 830 with special emphasis on organic reactions and compounds of industrial importance. Prerequisite: Chem. 830.

CIVIL ENGINEERING (C E)

809. Topographic Drawing (2:0:6) Use of conventional signs in mapping; the construction of large-scale topographic maps; enlargement and reduction of maps and plans; use of plane table and stadia. Prerequisites: C.E. 811, Dr. 1.
810. Statistics and Least Squares (3:2:2) Application of theory of probability and least squares to adjustment of observations. Prerequisite: Math. 2.
811. Plane Surveying (4:2:6) Theory of plane surveying; use and care of surveying equipment.
812. Curves and Earthwork (3:3:0) Computation of curves and earthwork. Prerequisite or concurrent: Math. 6.
813. Summer Surveying Camp (4) Field problems: geodetic, topographic, and preliminary route location; adjustment of instruments. Prerequisite: C.E. 818.
814. Photogrammetry (4:2:6) Interpretation and uses of aerial photographs; mapping by photogrammetric methods; application of aerial and terrestrial photographic surveying to specific engineering problems. Prerequisite: C.E. 818.
815. Geodetic Surveying (3:1:6) Determination of position by astronomic means; triangulation; base line measurement; precise leveling; State Plane Coordinates. Prerequisite: C.E. 811.
816. Special Surveys (2:2:3) Consideration of techniques used in hydrographic surveying; mine surveying; city surveying and land surveying. Prerequisite: C.E. 812.

817. Cartographic Techniques (2:0:6) Use and construction of maps; map projections; scribing techniques; reproduction and processing. Prerequisite: C.E. 809.

818. Route Surveying (2:0:6) Field and office operations connected with highway and railroad location; mass diagram as related to economical distribution of earthwork. Prerequisite: C.E. 813. Concurrent: C.E. 812.

861. Fluid Flow (2:2:0) Elementary theory of fluid flow. Hydrostatics; flow through orifices, Venturi meters, and pipes; flow in open channels. Theory of the centrifugal pump. Prerequisite: Math. 2.

890. Legal Aspects of Surveying (2:2:0) Law of contracts for engineering services; real property; relation of surveyor to client; law of surveying and boundaries. Prerequisite: C.E. 811.

COMMERCE (COM)

7. Business Management (3:3:0) Principles of business management; management functions and techniques; application of management functions to selected areas of enterprise. Prerequisite: third semester standing.

24. Principles of Marketing (3:3:0) Analysis of modern methods of marketing and merchandising as they are related to consumer, producer, and middleman. Prerequisite: third semester standing.

57. Intermediate Business Management (3:3:0) Case problems on business management functions and situations; executive subordinate relationships. Prerequisites: Com. 7, Econ. 2.

DRAWING (DR)

1. Engineering Drawing (2:0:6) Technical sketching, use and care of instruments, orthographic and auxiliary projection drawing with dimensions and sections, reproduction processes, and vertical freehand lettering.

2. Descriptive Geometry (2:0:6) Theory of projection drawing and its application in solving practical problems by projection and revolution of points, lines, planes, and solids. Prerequisite: Arch. 23 or Dr. 1.

4. Engineering Drawing (2:0:6) Covers elements of projection, drawing, and descriptive geometry; problems in perspective, isometric drawing, and in projection of points, lines, and planes.

800. Drawing Room Standards and Practices (2:0:6) Interpretation of various types of engineering drawings including dimensioning systems, symbols, and American standard drafting room practices.

803. Advanced Engineering Drawing (3:1:6) Application of principles of engineering drawing including auxiliary views in the layout of detail, assembly, and working drawings. Prerequisites: Dr. 1, 800.

ECONOMICS (ECON)

14. Principles of Economics (3:3:0) Analysis of the American economy emphasizing the nature and interrelationships of such groups as consumers, business, governments, labor, and financial institutions.

ELECTRICAL ENGINEERING (E E)

800. Applied Electricity (2:1:3) Basic principles of electric and electromagnetic circuits applied to electrical machinery. Prerequisite: Engr. 800.

801. Fundamentals of D. C. Circuits (3:3:0) Fundamental theory of current flow and electrical resistance with practical applications to direct current circuits.

802. D. C. Circuits and Laboratory (4:2:6) Review of fundamentals of direct current circuits and extension to simple direct current networks; use of network theorems. Prerequisite: E.E. 801.

803. D. C. Machines and Laboratory (3:2:3) Fundamental principles and applications of direct current to rotating machines. Prerequisite: E.E. 813.

804. A. C. Circuits and Laboratory (2:1:3) Continuation of E.E. 808; further studies of single and polyphase systems. Prerequisite: E.E. 808.

805. A. C. Machines and Laboratory (4:2:6) Fundamental principles of alternating current machinery. Prerequisite: E.E. 804.

806. Electric Power Generation and Distribution (1:1:0) Survey of the principles and practices of alternating-current generation, transmission, and distribution. Prerequisites: E.E. 804, 813.

807. Electrical Construction (1:0:3) Layout, assembly, connections, and tests of typical electrical and electronic devices. Prerequisite: E.E. 801.

808. Fundamentals of A. C. Circuits (2:2:0) Introduction to alternating-current theory — single and polyphase systems. Prerequisites: E.E. 801, Engr. 800.

809. Electrical Instrumentation (2:0:6) Principles of construction and operation of instruments to measure voltage, current, power, and energy; testing procedures and reports. Prerequisite or concurrent: E.E. 801.

810. Elementary Electronics (3:2:3) Electron theory and its application in vacuum tubes; characteristics of thermionic vacuum and gas tubes and photoelectric tubes. Prerequisite: E.E. 808.

811. Applied Electronics and Laboratory (5:3:6) Industrial and communications applications of electron tubes; electronic relays, motor control, welding controls, and radio receiver circuits. Prerequisite: E.E. 810.

812. Communication Systems (1:1:0) Survey of the principles and practices of electrical communication systems. Prerequisites: E.E. 804, 810.

813. Fundamentals of Electrical Machines (3) Introduction to the principles of electrical machines. Prerequisites: E.E. 802, 808.

ENGINEERING (ENGR)

800. Technical Calculations (4:4:0) Analysis of technical problems through the application of arithmetic, algebraic, geometric, logarithmic, and trigonometric principles.

801. Introduction to Engineering (0:1:0) Introduction to the use of the slide rule. Lectures by staff members and visiting engineers on general phases of engineering.

ENGINEERING MECHANICS (E MCH)

811. Elementary Mechanics (3:3:0) Forces; moments; resultants; equilibrium of coplanar force systems (simple machines; gear trains); friction; centroids and moment of inertia of areas; dynamics of particles. Prerequisite: Engr. 800.

813. Strength and Properties of Materials (3:3:0) Axial stress and strain; shear; riveted and welded connections; torsion; beam stresses and deflections; combined axial and bending stresses; columns; ductility, resilience, and toughness. Prerequisite: E.Mch. 811.

ENGLISH (ENGL)

0. Elements of Composition (0:3:0) Remedial course. Required of all students who have failed the English Placement Test. May not be repeated.
1. Composition and Rhetoric (3:3:0) Laws of English composition with theme writing. Freshman year.
3. Exposition (3:3:0) Continuation of Engl. 1, with special emphasis on exposition; theme writing. Prerequisite: Engl. 1 or 2. Freshman year.
800. English Grammar (3:3:0) A writing course with emphasis on sentence structure, punctuation, and paragraphing.
826. Report Writing (3:3:0) Interpretation of statistical data and writing of technical reports. Prerequisite: Engl. 3.

ENGLISH LITERATURE (E LIT)

2. Great Books of American Literature (3:3:0) Ten important American literary works. A first course in American literature, not open to students with prior credit in American literature.

FOODS, NUTRITION, AND HEALTH (F N)

121. Foods (5:3:5) Scientific principles and techniques in food preparation. Designed for students in hotel administration. Prerequisites: F.N. 150, Chem. 3.
150. Elementary Nutrition (2:2:0) Foundations of nutrition and its relation to health.

GEOGRAPHY (GEOG)

26. Economic Geography (3:3:0) Geography of the world's commodities and their regional aspects: land uses, extractive and manufacturing industries and their natural and cultural relationships.

HISTORY (HIST)

19. Modern Europe, 1815 to the Present (3:3:0) Growth of European democracy; scientific progress; Italian and German unification; Industrial Revolution: imperialism; the World Wars; search for security and stability; Fascism and Communism.

HOTEL FOOD SERVICE (H F S)

800. Orientation (1:1:0) Comprehensive survey of hotel and food service industries; emphasis on opportunities, personal qualities needed, and specific job requirements.
801. Communication Techniques (3:3:0) Special communication techniques of the hotel and food industries.
802. Sanitation (3:3:0) Practical application of sanitation principles to provide safe food and rooms for patrons of eating and housing establishments.
803. Food Merchandising (3:3:0) Methods of food promotion and advertising as related to volume sales; emphasis on menu planning; pricing, appearance, and customer appeal. Concurrent: In.A. 330.
804. Front Office Practices (3:2:3) Front office procedures and room sales with emphasis on hospitality to guests. Concurrent: H.F.S. 805.
805. Training and Supervision (3:3:0) Methods and techniques of training and supervising food service and housing employees for over-all efficiency of operation. Concurrent: In.A. 330.

806. Social Practices (1:1:0) Accepted standards of social practices for supervisory personnel in food service and housing establishments.

807. Catering (4:1:9) Planning, preparation, and service of food for special occasions; emphasis on baked products, hors d'oeuvres, garnishes, and party foods. Prerequisite: In.A. 330.

808. Food Service Equipment (3:3:0) Selection, purchase, and care of equipment and furnishings with emphasis on an understanding of the factors affecting suitability. Prerequisite: In.A. 330.

809. Housekeeping Practices (3:2:3) Functions of the housekeeping department; practice in techniques and procedures; principles of room decoration and furniture arrangement. Prerequisite: H.F.S. 805.

810. Foods Experience (4:1:10-12) Experience and observation in food services concerned primarily with special meals; emphasis on vegetable cookery, meat cookery, and carving. Prerequisite: H.F.S. 809.

811. Building Maintenance (4:3:3) Practical problems in operation and maintenance of heating, air conditioning, plumbing, refrigerating, and electrical equipment; emphasis on safety and fire prevention. Prerequisite: H.F.S. 809.

812. Food Procurement (3:3:0) Plans and procedures for procurement, receiving and storage of foods; use of food market forecasts and of purchase records. Prerequisite: In.A. 330.

813. Procurement of Supplies (3:3:0) Testing procedures and evaluation techniques for the determination of desirable qualities for all expendable tools and materials. Prerequisite: H.F.S. 809.

814. Food Cost Control (3:3:0) The incorporation of food cost controls in planning, production, and service. Prerequisite: In.A. 330.

815. Practical Experience (0) Twelve weeks of supervised practical experience in a restaurant or hotel. Prerequisite: H.F.S. 803 or 804.

INDUSTRIAL ENGINEERING (I E)

801. Industrial Organization and Management (2:2:0) The organization and structure of manufacturing enterprises with coverage of the basic internal activities.

803. Industrial Relations (2:2:0) Human factors in the industrial environment and the development of skills for their effective utilization.

804. Statistics and Nomography (2:2:0) The application of statistical methods to the analysis of engineering and production problems including preparation of charts and nomograms. Prerequisite: Math. 2.

805. Economics of Industry (2:2:0) Internal economics of industrial enterprise, cost factors, and methods of comparing alternate proposals.

807. Statistical Quality Control (3:3:0) The application of this technique to the control of the manufacturing processes and to inspection. Prerequisite: Math. 6.

808. Plant Layout (2:0:6) Arrangement and layout of equipment and processes in an industrial plant for the most economical production. Prerequisites: Dr. 1, I.E. 816.

809. Inspection and Quality Control (4:3:2) Inspection methods and procedures and their application to control and acceptance sampling based on statistical methods. Prerequite: I.E. 804.

810. Production Planning and Control (3:2:4) Analysis of production control systems and mechanisms used to control purchasing, stores, routing, scheduling, dispatching, and reporting of production. Prerequisite: I.E. 801.

811. Engineering Materials (4:3:3) Metallic materials and primary processes employed by manufacturing industries.

812. Manufacturing Processes (3:0:9) Machine shop, forging, welding and heat treatment, and foundry practices. Prerequisite: I.E. 811.

815. Production Design (4:2:6) The planning, designing, and specifying of both standard and special tools required for the production of manufactured goods. Prerequisites: I.E. 812, Dr. 803.

816. Methods Analysis and Motion Study (4:2:6) Construction and use of process charts, primary approach to operation analysis, and principles of motion economy. Prerequisite: I.E. 812.

817. Time Study and Wage Payment (4:2:6) Fundamentals of time study with instructions in time study practices; application of time studies to incentive wage payment systems. Prerequisite: I.E. 816.

INSTITUTION ADMINISTRATION (IN A)

330. Quantity Cookery (4:1:8) Application of principles of cookery to preparation of food in large quantities; standardization of formulas with reference to quantity, manipulation and cost; menu-making for institutions. Prerequisite or concurrent: F.N. 220 or H.A. 320.

MATHEMATICS (MATH)

2. Algebra (3:3:0) Exponents, systems of equations, quadriatic equations, progressions. Students who have received credit in any of the following may not schedule Math. 2 for credit: Math. 41, 42, 43, 44. Prerequisite: 1 entrance unit in algebra.

6. Plane Trigonometry (3:3:0) Solution of triangles; use of logarithms; trigonometric equations; identities. Prerequisites: 1 unit in plane geometry and 1 to 1½ units in algebra.

MECHANICAL ENGINEERING (M E)

800. Mechanisms (2:1:3) Motion in machine parts; graphical and analytical studies of relative motions, cams, gear tooth forms, gear trains, and flexible connectors. Prerequisites: E.Mch. 811. Dr. 2.

805. Kinematics (3:2:3) Graphical and analytical studies of relative motions, instant centers, velocity and acceleration in plane motions, slider crank mechanisms, cams, gears, gear trains, and flexible connectors. Prerequisites: E.Mch. 811, Dr. 1.

810. Product Design (4:2:6) Design of machine elements including levers, bearings, shafts, clutches, springs, and gears; selection of ball bearings and belts; design of small mechanical devices. Prerequisites: E.Mch. 813, M.E. 805, A.E. 808.

METALLURGY (METAL)

800. Introductory Metallurgy (3:3:0) Survey of elementary physical metallurgy, elementary chemical metallurgy, and elementary metallurgical technology.

801. Metallurgical Industries and Processes (4:3:3) Standards, ethics, and responsibilities of the metallurgist; plant visits; verbal and written reports on the metallurgical industry and on processes observed during plant visits.

802. Chemical Metallurgy (3:2:3) Inorganic chemistry of the metallic elements; chemical metallurgy, principles of pyrometallurgy, hydrometallurgy, fire refining, electrolytic refining, and distillation in extractive processes. Prerequisite: Chem. 3.

803. Physical Metallurgy (3:2:3) Properties of pure metals, constitution and properties of alloys; heat treatment; deformation of metals; elementary metallographic techniques. Prerequisite: Metal. 800.

804. Ferrous Metallurgy (3:2:3) Chemical and physical metallurgy of iron and steel; blast furnace; Bessemer; acid and basic open-hearth and electric-furnace processes; metallography of iron and steel. Prerequisites: Metal. 800, 802.

805. Nonferrous Metallurgy (3:2:3) The constitution, structure, and properties of nonferrous alloys; metallography of nonferrous metals and alloys. Prerequisites Metal. 800, 803.

806. Metallurgical Technology 1 (4:3:3) Advanced iron and steel making; industrial heat-treating practice; primary and secondary metal-working; metal-forming operations. Prerequisites: Metal. 803, 804.

807. Metallurgical Technology 2 (3:3:0) Elements of foundry and welding metallurgy; powder metallurgy; corrosion of metals; metal finishing. Prerequisites: Metal. 804, 805.

PHILOSOPHY (PHIL)

1. Introduction to Logic (3:3:0) Principles of correct thinking; deductive and inductive inference; use and misuse of language in reasoning.

2. Introduction to Philosophy (3:3:0) Man's quest to understand himself and the world, studied in the writings of Plato and Aristotle. Prerequisite: third semester standing.

PHYSICAL EDUCATION (PH ED)

1, 2, 3, 4. Health and Physical Education (1:0:3 each) Activities to develop physical and recreational skills: health instruction (required freshmen), sports orientation lectures (required, sophomores), beginning swimming (required of those low in skill). Selection from senior life saving, badminton, bait casting, bowling, boxing, golf instruction, golf playing, handball, hunting safety, softball, tumbling, volleyball, weight training, wrestling. Eight weeks' instruction in each activity.

11, 12. Health and Physical Education (1:1:2 each) Health instruction (required); dance fundamentals; body mechanics; individual or dual sports (tennis golf, bowling, or badminton); and team sports (field hockey, soccer, basketball, volleyball, softball, or lacrosse). Special provisions made for students with medical restrictions.

13, 14. Health and Physical Education (1:0:3 each) Swimming (required); selection from modern dance, folk and square dancing; body mechanics; individual or dual sports (tennis, golf, bowling, badminton, riding); team sports (field hockey, soccer, basketball, volleyball, softball, lacrosse). Special provisions made for students with medical restrictions. Prerequisites: Ph.Ed. 11, 12.

PHYSICS (PHYS)

215. Introductory Physics (3:3:2) Selected topics in mechanics, heat, and sound. Prerequisite: algebra to quadratics.

265. Introductory Physics (3:3:2) Selected topics in light, electricity, and magnetism. Prerequisite: Phys. 215.

800. Elements of Physics (3:2:2) Selected topics in mechanics, heat, sound, electricity, magnetism, light, and atomic and nuclear physics of particular significance in analysis of engineering applications. Prerequisite or concurrent: Engr. 800.

801. Elementary Physics (3:2:2) Basic principles of physics covering mechanics, heat, and sound.

802. Elementary Physics (3:2:2) Continuation of Phys. 801, covering electricity, magnetism, and light. Prerequisite: Phys. 801.

820-821 Instrumentation (3:2:2 each) Application of the basic principles of physics to the design and use of scientific measuring devices. Prerequisite: Phys. 801.

POLITICAL SCIENCE (PL SC)

3. Government and Politics in Modern Society (3:2:2) Government in the modern world with special reference to American institutions; theories of governmental functions; structure and operation of national and international governments. Students who have taken Pl.Sc. 4 may not schedule this course.

4. Government of the United States (3:3:0) American national, state, and local government; forms and theories of government in the world; governmental trends and problems of special interest to students in all Colleges except Liberal Arts. Students who have taken Pl.Sc. 3 may not schedule this course

PSYCHOLOGY (PSY)

2. Psychology (3:3:0) Introduction to general psychology; principles of human behavior and their applications. Student is required to spend 6 hours per semester of outside time participating in psychological experiments.

SPEECH (SPCH)

200. Effective Speech (3:3:0) Fundamental principles and methods of selecting, analyzing, evaluating, organizing, developing, and communicating information, evidence, and points of view for constructive influence in speech situations.

ZOOLOGY (ZOOL)

25. General Zoology (3:2:2) General principles of animal biology; a survey of the bases of animal life.

26. General Zoology (3:2:2) The structure, activities, embryology, interrelationships, and economic importance of animals. Prerequisite: Zool. 25.

29. Mammalian Anatomy (3:1:6) Anatomy of a mammal, with special reference to that of man.

41. Human Physiology (3:3:0) Normal functions of the animal body, with special reference to those of man.

Penn State Centers

ADMINISTRATIVE STAFF

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WILLIAM P. SIMONS, B.A.	*District Representative*
ALTOONA	
ROBERT E. EICHE, B.A.	*Administrative Head*
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COLEMAN HERPEL, B.A., A.M.	*Administrative Head*
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KENNETH M. BAILEY, B.B.A. M.A.	*Assistant Administrative Head*
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HAROLD A. SAVIDES, B.S., M.S.	*District Representative*
RICHARD A. SWAVELY, B.A.	*District Representative*
POTTSVILLE	
HENRY I. HERRING, B.A., M.A.	*Administrative Head*
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HARRY V. WEAVERLING, B.A., M.Ed.,	*District Representative*

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